

Managing Crabgrass Without Herbicides: What Changes in Management and Budget Need to be Considered?

Randall G. Probst

UMass Extension Landscape, Nursery and Urban Forestry Program

Recently there has been an increase in the requests for crabgrass control strategies which do not use preemergence or postemergence herbicides. Unfortunately, there is no single, easily stated answer and a silver bullet does not currently exist. However, there are several components of a turf management program that can be adjusted to aid in the control of crabgrass. While implementing some of these management strategies will result in little change in the overall management system, others may result in appreciable changes in the budget due to additional labor, equipment and materials.

When exploring non-herbicidal management options for crabgrass, attention should be focused on implementing cultural practices that result in a healthy, dense turf. Successful execution of many of the commonly used cultural practices can significantly increase the inherent competitive nature of turfgrass and result in a decrease in the severity of many crabgrass infestations.

Crabgrass seeds require light for germination and establishment. Increasing the mowing height will result in a decrease in the amount of light reaching the soil surface and can reduce the germination and establishment of crabgrass. This is particularly important in the spring and early summer during the peak germination period of the species. Decreasing the height of cut and collecting clippings that contain seedheads during the late summer and early fall can be effective in reducing the amount of viable seed that is added to the seed bank. Along with adjustments in mowing height, fertility can play a major role in the reduction of light that penetrates the turf canopy and reaches the soil surface. Fertilization programs should supply adequate nutrients to yield a dense turf. Avoid high levels of fertility during the summer months, although this may be difficult to accomplish with organic sources of nitrogen. If heavy infestations of crabgrass result in turf thinning, increase fertility levels in the fall as crabgrass dies in order to support turf recovery. An effective aeration program will relieve compaction and increase overall turf health and density. However, aeration methods that bring soil to the surface can reposition crabgrass seed, which was once too deep to germinate, to a location where germination and establishment are favored.

Crabgrass and many other annual weeds are warm-season species. Warm-season species are capable of growing very well during the hot, dry periods that are characteristic of summer. Turfgrass species utilized in the northeast are cool-season species and without adequate moisture from rainfall or irrigation become dormant during the summer. During periods when the growth of cool-season turf species has slowed or ceased as a result of low soil moisture and high temperatures, crabgrass becomes very competitive in otherwise healthy, dense turf. In the absence of summer rainfall, irrigation should be applied to maintain turf growth and prevent summer dormancy. Special attention should be focused on areas that are prone to drought including elevated areas, south and southwest facing slopes and areas adjacent to sidewalks and driveways. These areas may be hand watered in lieu of running the entire irrigation system.

Turf renovation carried out in the spring and early summer without the use of a preemergence herbicide fails more often than not due to annual grass pressure. This weed pressure is not present if turf establishment is initiated in the late summer and early fall. Crabgrass plants that germinate in new seedings at this time of the year seldom reach a size that deters establishment and will soon die with the onset of cold weather. When planning turf establishment, choose species and cultivars that are best suited for site conditions and turf use. Aggressive cultivars should be considered. Encourage rapid establishment by providing adequate fertility at seeding, especially phosphorus. Maintain good soil moisture during the germination and early establishment period. Overseeding can be a valuable tool in restoring sites where turf thinning has resulted from insufficient crabgrass control. Openings in the turf as a result of insect damage, diseases and excessive wear are prone to weed growth. Overseeding should be used to repair this damage. The same recommendations for seed selection, fertility and soil moisture would pertain.

Managing crabgrass without the use of herbicides can be relatively easy at sites where populations are low. Where existing populations are moderate to very high, this can be very difficult if not impossible. As previously mentioned, the failure of new seeding and non-herbicidal control programs is often due to large existing crabgrass populations at the site. One option would be to use a preemergence control program for few years in order to decrease populations. Use untreated locations (different each year) at the site to monitor population decreases. Once populations have been reduced, a non-herbicidal control program can be initiated. Another option that may solve this problem would be the use of Basamid™, a soil fumigant containing the active ingredient dazomet, before turf establishment. Basamid™ will greatly reduce existing crabgrass populations and increase both the rate of success of turf establishment and subsequent non-herbicidal management programs implemented at the site. Follow label directions to maximize results. (Basamid™ applications will need to be done by a licensed pesticide applicator).

Several products containing corn gluten are commercially available for crabgrass control. Corn gluten meal is a by-product of the wet milling process of corn. Corn gluten products are marketed for use as a preemergence herbicide, and contain 10% nitrogen by weight. Compounds in the protein fraction of corn gluten have been reported to inhibit root growth of germinating seeds. Application rates range from 10 to 80 lbs per 1000 sq. ft. annually and vary among products. Some studies report crabgrass control ranging from 50 to 60% the first year and as much as 90% control after three consecutive years of use. It is often disputed as to whether the control achieved with corn gluten is associated with the compound's inhibitory characteristics or simply the competitive nature of a well fertilized turf. If corn gluten products are used, adjustments in the fertility program may be needed in order to avoid over fertilization. The nitrogen supplied by corn gluten is in a slow-release form and available throughout the growing season. Therefore, adjustments in turf and pest management may be needed. Since corn gluten interferes with root growth at germination it should not be applied where seeding or re-seeding is planned. These products should not be used in areas where Canada geese and other waterfowl are considered unwanted inhabitants. Corn gluten products are much more expensive than traditional preemergence herbicides and, in most cases, the treatment of large areas is cost prohibitive.

Before a decision is made to manage crabgrass without the use of herbicides, several aspects related to the site and overall management need to be considered. First, what is the existing crabgrass population at the site? A site at which sufficient crabgrass control has been difficult to achieve with herbicides would not be a good candidate for a non-herbicidal program until measures were taken to reduce the existing population. Second, what is the level of crabgrass control that is considered to be acceptable at that site? One should understand that non-herbicidal programs seldom result in comparable crabgrass control to those which use herbicides. This is especially true in the first few years after adoption and if crabgrass populations are moderate to very high.

Depending on existing populations it may take several years to reach a level that is considered acceptable to both client and turf manager. And third, what are the available resources allocated to manage the site? Resources such as materials and labor need to be considered. Some elements of a non-herbicidal weed control program, such as an increase in mowing height, may be easily achieved with no additional resources needed. However, other management practices could result in a significant change in the management budget. Additional expenses would be incurred for labor and material such as seed, fertilizer, equipment, and irrigation. If any of these considerations are of concern, than perhaps an annual crabgrass control program that does not use herbicides is not appropriate at this time. One should then focus on developing an IPM program that integrates all effective control strategies.

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